IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): E. HEBERT et al.

Application No.: 09/274,015

Filed: March 22, 1999

For: MULTILAYER GOLF BALL WITH A THIN THERMOSET OUTER LAYER

Attorney Docket No: 20002.0052

Group Art Unit: 1732

Examiner: E. Lee

DECLARATION OF SHENSHEN WU UNDER 37 CFR § 1.132

Mail Stop AF
Commissioner for Patents
PO Box 1450
Alexandria, Virginia 22313-1450

Sir:

I, Shenshen WU, hereby declare the following:

1. I am a citizen of the United States, and reside at 334 Old Westport Road, North Dartmouth, MA 02747.

2. I am a co-inventor of the invention disclosed and claimed in U.S. Patent No. 5,006,297 to Brown and Wu ("the '297 patent").

3. Over the past 24 years, I have been employed by ACUSHNET COMPANY (formerly doing business as Titleist and Foot-Joy Worldwide), 333 Bridge Street, Fairhaven, MA 02719, the Assignee of record of the entire, right, title and interest in the '297 patent invention, as well as the invention claimed in the 09/274,015 application.

4. I presently hold the position of Project Manager, Research & Development.

5. This declaration is filed to provide clarification of the molding process as understood at the time of the '297 patent invention.

to partially cure prior to the introduction of the core, the molding process disclosed in the '297 patent is available only to thermoplastic cover material applications.

7. The '297 patent uses top and bottom smooth-walled cavities (Col. 5, lines 54-56), for the initial "casting" process, which results in a smooth-surfaced golf ball product (FIG. 3). The smooth-surfaced golf ball product is then subjected to compression molding (a combination of heat and pressure) with mold cup halves having negative dimples therein (Col. 6, lines 10-18). Thus, only after the subsequent compression molding does a final dimpled golf ball product exist (Col. 6, lines 19-21).

8. As understood in the golf ball manufacturing art, there are two different types of cover materials: thermoplastic and thermoset. The difference between the two is critical, especially when considering molding processes. For example, a thermoplastic polymer is a material that softens or melts when heated and hardens when cooled. Thermoplastic polymers consist of long polymer molecules that are not linked to each other, i.e., they have no cross-links, and are often supplied as granules and heated to permit molding or extrusion. In contrast, a thermoset polymer is a material that cannot be softened on heating because the polymer chains are joined (or cross-linked) by intermolecular bonding. Cross-linking is achieved during molding using chemicals, heat, or radiation; this process is called curing or vulcanization. Thus, once a thermoset material is formed, it cannot be milled or molded under heat. In other words, a thermoset material could not be cast into the '297 patent's smooth-surfaced golf ball product and then later compression molded to provide a dimpled golf ball product.

9. Thus, at the time of the invention, the "casting" disclosed in the '297 patent was intended and available only for thermoplastic materials.

10. In support of this position, attached hereto as Exhibit A is a copy of an excerpt from "*The Development and Use of Polyurethane Products*," wherein the above-described differences between thermoplastic and thermoset polyurethanes are outlined. E.N. Doyle, *The Development and Use of Polyurethane Products* 410 (McGraw-Hill 1971).

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Respectfully Submitted,

Date: _5/28/2003_

Shenshen WU

EXHIBIT A
THE DIFFERENCES BETWEEN THERMOPLASTIC AND THERMOSET POLYMERS

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